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NASA-02220 (June 2004)

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA

Superseding NASA-02220 (September 1999)

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DIVISION 02 - SITE CONSTRUCTION

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SECTION 02220

DEMOLITION

06/04

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NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.

This broadscope section covers the demolition, dismantling, reconditioning and disposal of existing building materials, equipment and utilities.

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PART 1 GENERAL

1.1 REFERENCES

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NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.

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The publications listed below form a part of this section to the extent referenced:

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO M 145	(1991; R 2003) Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
AASHTO T 180	(2001) Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)

FAA AC 70/7460-1	(Rev K; Change 1) Obstruction Marking and Lighting

1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions

in Section 01330, "Submittal Procedures," and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

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The following shall be submitted in accordance with Section 01330, "Submittal Procedures," in sufficient detail to show full compliance with the specification:

SD-01 Preconstruction Submittals

Contractor shall record Existing Conditions prior to starting work in accordance with the paragraph entitled, "Existing Conditions," of this section.

Interruption of the following shall be submitted:

Utility Outages
Traffic Interruptions

SD-07 Certificates

Contractor shall submit a detailed Demolition Plan of the work procedures and safety precautions to be used prior to the beginning of work.

1.3 DEMOLITION PLAN

Contractor shall prepare and submit a detailed Demolition Plan of the work procedures and safety precautions to be used in the identification, demolition, handling, removal, transportation, and reclamation or disposal of removed materials. Contractor shall meet with the Contracting Officer, prior to beginning work, to discuss in detail the demolition plan.

1.4 EXISTING CONDITIONS

Existing Conditions shall be recorded in the presence of the Contracting Officer showing the condition of structures and other facilities adjacent to areas of alteration or removal. Such record shall contain the elevation of the top of foundation walls, the location and extent of cracks and other damage and description of surface conditions that exist prior to the start of work. Copies of the record shall be submitted and the stated conditions before starting work shall be verified.

1.5 INTERRUPTION OF SERVICE

Written approval by the Contracting Officer for interruption of service Utility Outages and Traffic Interruptions shall be submitted at least [48] [_____] hours prior to work.

PART 2 PRODUCTS

2.1 FILL MATERIAL

Fill material shall conform to the definition of satisfactory soil material

as defined in AASHTO M 145, Soil Classification Groups A-1, A-2-4, A-2-5 and A-3. In addition, fill material shall be free from roots and other organic matter, trash, debris, frozen materials, and stones larger than 2 inches 50 millimeter in any dimension.

Proposed fill material shall be sampled and tested by an approved soil testing laboratory, as follows:

Soil classification	AASHTO M 145
Moisture-density relations	AASHTO T 180, Method B or D

PART 3 EXECUTION

3.1 DISCONNECTING EXISTING UTILITIES

[Prior to the start of work, the Government will disconnect and seal the utilities serving each area of alteration or removal.]

[Prior to the start of work, utilities serving each area of alteration or removal will be shut off by the Government and shall be disconnected and sealed by the Contractor.]

3.2 TEMPORARY UTILITY SERVICES

Install temporary utility services before disconnecting existing utilities. Contractor shall provide a minimum of 2 aviation red or high intensity white obstruction lights on temporary structures (including cranes) over 100 feet 30 meter above ground level. Light construction and installation shall comply with FAA AC 70/7460-1. Lights shall be operational during periods of reduced visibility, darkness, and as directed by the Contracting Officer. Maintain the temporary services during the period of construction and remove only after permanent services have been installed and tested and are in operation.

3.3 PRECAUTION AGAINST MOVEMENT

Contractor shall provide shoring and bracing or other supports to prevent movement, settlement, or collapse of facilities that are to remain which are adjacent to areas of alteration and removal.

3.4 DEMOLITION AND REMOVAL WORK

3.4.1 Demolition

3.4.1.1 Concurrent Earth-Moving Operations

Excavation, filling, and other earth-moving operations that are sequential to demolition work shall not be started in areas occupied by structures to be demolished until all demolition in the area has been completed and debris has been removed.

3.4.1.2 Buildings

Buildings shall be demolished or may be removed, subject to the approval of the Government and of the highway authorities having jurisdiction.

Demolition shall proceed in a systematic manner from the top of the structure to the ground. Demolition works above each tier or floor shall

be completed before the supporting members on the lower levels are disturbed. Concrete and masonry walls shall be demolished in small sections. Structural framing members shall be removed and lowered by means of derricks, platform hoists, or other approved method.

Buildings, or the remaining portions thereof, not exceeding 80 feet 25 meter in height may be demolished by the mechanical method of demolition.

Concrete slabs shall be broken up and removed.

3.4.1.3 Below-Grade Construction

[Foundation walls shall be demolished to a depth of not less than 12 inches 305 millimeter below the existing ground surface. In addition, below-grade wood and metal construction and floor construction, except basement concrete slabs on ground, shall be demolished and removed.]

[Foundations, basement concrete slabs on ground footings, and other below-grade construction shall be demolished and removed.]

3.4.1.4 Filling Basements and Voids

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NOTE: Delete paragraph heading and the following paragraphs when excavation, fill, backfill, or other earthwork is included in this contract.

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Basements and voids resulting from the demolition of structures shall be completely filled with specified fill material and graded.

Prior to filling, basements and voids shall be free of standing water, frost, frozen material, trash, and debris.

Fill material shall be placed in horizontal layers not to exceed [_____] [12] inches [300] millimeter in loose depth. Each layer shall be compacted to a minimum of [95] [_____] percent of the maximum density as determined by AASHTO T 180, Method D, at optimum moisture content.

After fill has been placed, the surface of the fill shall be graded to meet adjacent contours and to provide surface water drainage.

3.4.2 Protective Measures

Existing construction shall not be disturbed beyond the extent indicated or necessary for installation of new work. Temporary shoring and bracing shall be provided for support of building components to prevent settlement or other movement.

Protective measures shall be provided to control accumulation and migration of dust and dirt in all areas of work. Dust, dirt, and debris shall be removed from the areas of work daily.

3.4.3 Salvageable Materials and Equipment

Government will designate materials and equipment to be salvaged.

Salvageable materials and equipment shall be removed in a manner that will cause the least possible damage thereto. Contractor personnel shall

handle, store, and protect removed items that are to be reused in the work or are to be retained by the Government.

Identification tags shall be provided on items boxed or placed in containers, indicating the type, size, and quantity of materials.

3.4.4 Scrap Metal

[Scrap metal shall be stockpiled in designated areas, according to type of metal.]

[Scrap metal shall become the Contractor's property and shall be removed from the site as it accumulates.]

3.4.5 Site Work

Chain link fencing, gates, and other salvaged items shall be removed and stored. Gates shall be removed as whole units. Chain link fabric shall be cut to lengths of [_____] [25] feet [7] meter and stored in rolls off the ground.

3.4.6 Buildings and Structures

Specified removal operations shall be performed in existing buildings as required to complete the work.

Concrete:

Existing concrete shall be demolished, removed, and disposed of. Square, straight edges shall be provided where existing concrete adjoins new work and other locations. Existing steel reinforcement shall be protected where indicated or shall be cut off flush with face of concrete.

Masonry:

All masonry construction shall be demolished and removed.

Masonry units for reuse shall be removed, cleaned, and stacked off the ground on wood pallets. Salvaged masonry units not reused in the work shall remain the property of the Government. Damaged units unsuitable for reuse shall be considered as debris and shall be disposed. Salvaged masonry units shall be transported for storage to a location as directed by the Contracting Officer.

Structural steel:

Structural steel components shall be dismantled at field connections and in a manner that will prevent bending or damage.

[Flame-cutting torches shall not be used.]

[When approved, flame-cutting torches may be used where other methods of dismantling are not practical.]

Trusses and joists shall be transported as whole units and not dismantled.

Structural steel shall be transported to designated storage area,

stacked according to size, type of member and length, and stored off the ground and protected from the weather.

Miscellaneous metals:

Shop-fabricated items such as access doors and frames, steel gratings, metal ladders, wire mesh partitions, metal railings, and similar items shall be salvaged as whole units.

Light-gage metal items, such as metal gutters, roofing and siding, and similar items, shall be salvaged unless designated as scrap metal by the Contracting Officer.

Carpentry:

Lumber, millwork items, and finished boards, except those that are unfit for reuse, shall be salvaged.

Windows, doors and frames, and similar items shall be removed as units, complete with trim and accessories. Hardware shall be left intact and attached to units, except that door closers shall be removed. Open end of door frames shall be braced to prevent damage thereto.

Gypsum board, fiberboard, and other composition sheathing boards shall be classified as debris to be removed and disposed of.

Demountable partitions, built-in furniture, toilet partitions, lockers, and other prefabricated units shall be removed in sections and salvaged.

Bolts, nuts, washers, timber connectors, and other rough hardware shall be classified as debris and disposed of.

Salvaged items shall be transported to designated storage area and stored as directed by the Contracting Officer.

Miscellaneous items:

Chalkboards, tackboards, toilet-room accessories, and similar surface-mounted items shall be removed and salvaged as whole units, complete with all accessories.

Venetian blinds, complete with hardware items which shall be packaged and attached thereto, shall be removed and salvaged.

Salvaged items shall be transported to designated storage area and stored as directed by the Contracting Officer.

3.4.7 Mechanical Equipment and Fixtures

Mechanical hardware shall be disconnected at the nearest convenient connection to existing services that are to remain.

Each item of equipment and fixtures shall be salvaged as a unit; listed, indexed, tagged, and stored. Each unit shall be salvaged with its normal operating auxiliary equipment.

Equipment shall not be removed until approved.

Disconnection from utilities:

Mechanical equipment and fixtures shall be disconnected at fittings. Service valves shall be removed and attached to the unit.

Preparation for storage:

Water, dirt, dust, and foreign matter shall be removed from units; tanks, piping and fixtures shall be drained; and interiors, if previously used to store flammable, explosive, or other dangerous liquids, shall be steam cleaned. Openings shall be sealed with caps, plates, or plugs.

Motors attached by flexible connections shall be secured to the unit.

Lubricating systems shall be charged with the proper oil or grease.

Piping:

Piping shall be disconnected at unions, flanges and valves, and fittings as required to reduce the pipe into straight lengths for practical storage. Salvaged piping shall be stored according to size and type. If the piping that remains can become pressurized due to upstream valve failure, end caps, blind flanges, or other types of plugs or fittings with a pressure gage and bleed valve shall be attached to the open end of the pipe to ensure positive leak control.

Piping that previously contained gas, gasoline, oil, or other dangerous fluids shall be carefully dismantled, with precautions taken to prevent injury to persons and property. Such piping shall be stored outdoors until all fumes and residues are removed.

Prefabricated supports, hangers, plates, valves, and specialty items shall be boxed according to size and type. Sprinkler heads shall be individually wrapped in plastic bags before boxing.

Piping not designated for salvage, or not reusable, shall be considered as scrap metal.

Ducts:

Removed duct work shall be classified as scrap metal.

Fixtures:

Fixtures associated with plumbing, heating, air conditioning, refrigeration, and other mechanical system installations shall be removed and salvaged. Fixture units shall be tagged for identification, storage, and protection from damage.

Broken, damaged, or otherwise unserviceable units shall be classified as debris and disposed of by the Contractor.

Motor and machines:

Motors and machinery items associated with the plumbing, heating, air conditioning, refrigeration, and other mechanical system installations shall be removed and salvaged. Auxiliary units and accessories shall be salvaged and boxed and stored with the main unit.

Such items shall be tagged for identification, stored, and protected from damage.

Salvaged items shall be transported to designated storage area and stored as directed by the Contracting Officer.

3.4.8 Electrical Equipment and Fixtures

Motors, motor controllers, and operating and control equipment shall be salvaged and attached to the driven equipment.

Wiring systems and components shall be salvaged. Loose items shall be boxed and tagged for identification.

Primary, secondary, control, communication, and signal circuits shall be disconnected at the point of attachment to their distribution system.

Fixtures:

Electrical fixtures shall be removed and salvaged. Unprotected glassware shall be removed from the fixture and salvaged separately.

Incandescent lamps, mercury-vapor lamps, and fluorescent lamps shall be salvaged, boxed and tagged for identification, and protected from breakage.

Electrical devices:

Switches, receptacles, switchgear, transformers, regulators, meters, instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items shall be removed and salvaged. These items shall be boxed and tagged for identification according to type and size.

Conductors:

Conductors, including insulated wire and nonmetallic sheathed and flexible armored cable, shall be removed and salvaged.

Conduit:

Conduit, except where embedded in concrete or masonry, shall be salvaged. Corroded, bent, or damaged conduit shall be considered as scrap metal. Straight, undamaged lengths shall be sorted and stockpiled according to size and type.

Wiring ducts or troughs:

Wiring ducts or troughs shall be removed and salvaged. Plug-in ducts and wiring troughs shall be disassembled into unit lengths. Plug-in or disconnecting devices shall be removed from the busway and stored separately.

Miscellaneous items:

Supports, knobs, tubes, cleats, and straps shall be classified as debris to be removed and disposed.

3.4.9 Elevators and Hoists

Elevators, hoists, and similar conveying equipment shall be removed and salvaged as whole units, to the most practical extent. Items shall be removed and prepared for salvage without damage to any of the various parts.

Rails for structural steel shall be salvaged and stored with the equipment as an integral part of the unit.

3.5 DISPOSAL OF REMOVED MATERIALS

3.5.1 General

Debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations shall be disposed of in accordance with all applicable federal, state and local regulations as contractually specified [off the [_____] center] [_____]. Removed materials shall not be stored on the project site.

3.5.2 Burning on Government Property

[Burning of materials removed from demolished structures will not be permitted on Government property.]

[Combustible materials removed from demolished structures shall be transported to the areas designated and disposed of by burning. Fires shall be controlled to provide protection of persons and property. Burning fires shall be monitored continuously until the fires have burned out or have been extinguished.

Federal, state, and local laws regulating the building and maintaining of brush and trash fires shall be complied with.]

3.5.3 Removal to Spoil Areas on Government Property

Noncombustible materials removed from demolished structures shall be transported to designated spoil areas on Government property.

3.5.4 Removal from Government Property

Waste materials removed from demolished structures, except waste soil, shall be transported from Government property and legally disposed of. Waste soil shall be disposed of as directed.

3.6 REUSE OF SALVAGED ITEMS

Salvaged materials and equipment designated for reuse shall be reconditioned as specified [in Section [_____]] before installation. Items damaged during removal and salvage operations shall be repaired or replaced as necessary to restore them to usable condition.

-- End of Section --